

Appl. No. 09/900,087  
Amtd. Dated 03/13/2006  
Reply to Office action of 12/13/2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) An orthogonal frequency division multiplexing (OFDM) system for generating a modulated orthogonal multi-carrier signal, comprising:

an over sampling logic to generate an  $MN$  over sampled data frame from an  $N$  sample data frame, wherein said  $MN$  over sampled data frame comprises  $M - 1$  zeros between consecutive samples;

a wave shaping filter to perform convolution of said over sampled data frame with  $MN$  filter coefficients to produce an  $MN$  complex filtered sample frame in order to modify the frequency response of said modulated orthogonal multi-carrier signal in the frequency domain;

a spectrum mask to modify said  $MN$  complex filtered sample frame respectively by  $MN$  elements to produce an  $MN$  complex filtered and masked sample frame in order to further modify the frequency response of said modulated orthogonal multi-carrier signal; and

an inverse fast Fourier transform (IFFT) to generate said modulated orthogonal multi-carrier signal from said  $MN$  complex filtered and masked sample frame.

2. (Original) The OFDM system of claim 1, further comprising a modulation and framing logic to generate said  $N$  sample data frame by modulating a binary data frame.

3. (Original) The OFDM system of claim 2, wherein said modulation and framing logic performs phase shift keying (PSK) type modulation, coherent or differential.

4. (Original) The OFDM system of claim 2, wherein said modulation and framing logic performs amplitude shift keying (ASK) type modulation.

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5. (Original) The OFDM system of claim 2, wherein said modulation and framing logic performs quadrature amplitude modulation (QAM).

6. (Original) The OFDM system of claim 1, further comprising a framing and overlapping logic to frame in time said modulated orthogonal multi-carrier signal and overlap in time consecutive frames of said modulated orthogonal multi-carrier signal.

7. (Original) The OFDM system of claim 1, further comprising a spectrum control input to receive information relating to a desired spectrum for said modulated orthogonal multi-carrier signal and to control said spectrum mask to produce said desired spectrum for said modulated orthogonal multi-carrier signal.

8-20. (Cancelled)

21. (Previously Presented) A method of producing a modulated multi-carrier signal, comprising:

receiving an input frame of data samples to be modulated onto said multi-carrier signal;

modulating said data samples onto a plurality of carrier signals; and

performing time domain modification of said carrier signals to conduct spectral shaping of and to form said modulated multi-carrier signal, said time domain modification comprises (i) increasing a frequency resolution of the plurality of carrier signals, and (ii) using a spectrum filter to perform spectral shaping of said modulated multi-carrier signal.

22-23. (Cancelled).

24. (Previously Presented) The method of claim 21, wherein modulating said data samples onto said plurality of carrier signals, respectively comprises performing an inverse Fast Fourier transform on said modulated data samples.

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25. (Original) The method of claim 21, further comprising controlling said time domain modification to achieve a desired spectrum for said modulated multi-carrier signal.

26. (Previously Presented) The OFDM system of claim 1, wherein the first value  $M$  and the second value  $N$  are integer values.

27-34. (Cancelled).